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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,623	07/06/2005	Rodney A. Mattson	PHUS030006US	8356

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS  
595 MINER ROAD  
CLEVELAND, OH 44143

EXAMINER
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KIKNADZE, IRAKLI

ART UNIT	PAPER NUMBER
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2882

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/541,623	Applicant(s) MATTSON ET AL.	
	Examiner Irakli Kiknadze	Art Unit 2882	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-17 and 20-24 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/6/2005</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 6, on lines 2 and 3, the phrase "substantially absorbing" renders the claim(s) indefinite because "substantially" is a broad term and resulting claim does not clearly set for the metes and bounds of the patent protection desired.

Claim 7 is rejected by virtue of its dependence.

### ***Claim Rejections - 35 USC § 103***

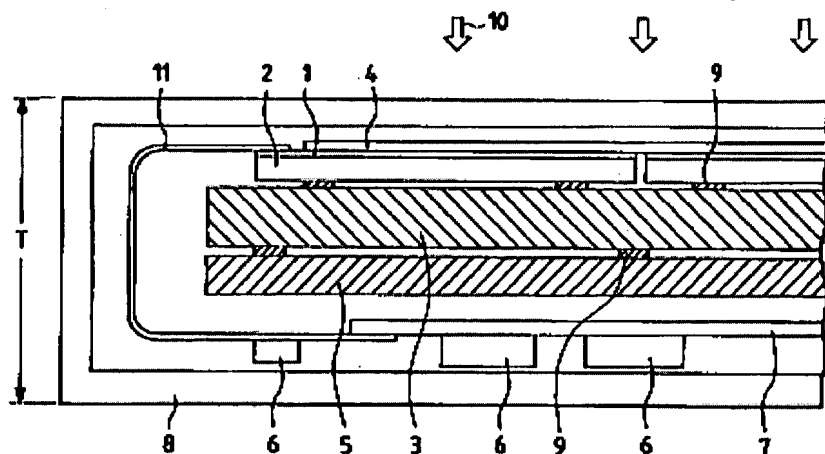
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6-9, 17 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki et al. (US patent 5,777,335) in view of Croydon (UK Patent Application 2364379 A).

With respect to claims 1, 6, 7, 17 and 21, Mochizuki teaches a method and apparatus comprising: a radiation detector module including (Fig.1):

**FIG. 1**



a scintillator (4)

arranged to receive penetrating radiation (10), the scintillator (4) producing second radiation responsive to the penetrating radiation;

a detector array (1 and 2) arranged to detect second radiation produced by the scintillator (4);

electronics (6) arranged on a side of the detector array opposite from the scintillator in a path to receive penetrating radiation that has passed through the scintillator;

a radiation shield (5) disposed between the detector array (1 and 2) and the electronics (6), the radiation shield (5) being substantially absorbing with respect to the

penetrating radiation; an electrical wiring (11) electrically connecting the detector array (1 and 2) and electronics (6) (column 3, lines 22-38 and 54-61; column 7, line 55 – column 8, line 7).

Mochizuki fails to teach that the radiation shield including openings communicating between the detector array and the electronics; and electrical feedthroughs passing through the radiation shield openings and electrically connecting the detector array (1) and the electronics.

Croydon teaches a radiation detector with a radiation shield including openings communicating between the detector array (1) and the electronics; and electrical feedthroughs (8) passing through the radiation shield openings and electrically connecting the detector array (1) and the electronics (4 and 5) (see Fig. 1; page 8, lines 10-23). This arrangement provides user with the radiation detector comprising more straightforward and compact electrical wiring arrangement for connecting the detector array and electronics. Additionally, the electrical wires are shielded minimizing possible interference from the penetrating radiation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use electrical feedthroughs passing through the radiation shield openings and electrically connecting the detector array and the electronics as suggested by Croydon in the method and apparatus of Mochizuki, since such a modification would provide user with the improved radiation detector which is more compact and protected since the sensitive electrical connections and electronic elements are shielded minimizing possible interferences from the penetrating radiation.

With respect to claim 2, Mochizuki teaches that the detector array includes: back-contact photodetectors each having a second radiation-sensitive side facing the scintillator and an electrical contacting side facing the radiation shield (column 7, lines 7, line 55 –column 8, line 7)

With respect to claims 3, 8 and 9, Mochizuki teaches that the radiation shield (5) is electrically insulating and comprises lead glass (Fig. 1; column 4, lines 57-65).

6. Claim 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki et al. (US patent 5,777,335) and Croydon (UK Patent Application 2364379 A) as applied to claim 1 above, and further in view of Hoffman (US Patent 6,115,448).

With respect to claims 12-16, Mochizuki as modified by Croydon, teaches claimed invention except for employing high-Z material conductors. Hoffman teaches a radiation detector comprising plurality of golden plated conductors (see claim 21). Gold conductors are commonly used in the electronic devices due to its excellent electro conductivity and corrosion resistant properties. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use electrical conductors comprising gold as suggested by Hoffman in the apparatus of Mochizuki as modified by Croydon, since such a modification would provide user with the more reliable detector module comprising plurality of golden plated conductors exhibiting excellent electro conductivity and corrosion resistant properties.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon et al. (US patent 6,256,404 B1) in view of Mochizuki et al. (US patent 5,777,335) and Croydon (UK Patent Application 2364379 A).

With respect to claim 20, Gordon teaches a computed tomography scanner (100) including (Figs. 1-4): a stationary gantry (125); a rotating gantry rotatably connected with the stationary gantry (125) for rotation about an axis of rotation; an x-ray source (128) mounted to the rotating gantry (22) for projecting a cone-beam of radiation through the axis of rotation; a tiled array (130) of detector modules (521) disposed across the axis of rotation from the x-ray source (128); and a reconstruction processor (515) for processing an output of the electronics into an image representation (column 9, lines 26-58 and column 12, lines 54-65). Gordon teaches radiation shield (138) connected to detector (130) and preventing radiation from propagating beyond the gantry (125) (Fig.3; column 10, lines 1-3). Gordon fails to teach that radiation shield including openings communicating between the detector array and the electronics associated to the detector; and electrical feedthroughs passing through the radiation shield openings and electrically connecting the detector array (1) and the electronics.

Mochizuki teaches a radiation detector comprising: a scintillator (4) arranged to receive penetrating radiation (10), the scintillator (4) producing second radiation responsive to the penetrating radiation;

a detector array (1 and 2) arranged to detect second radiation produced by the scintillator (4);

electronics (6) arranged on a side of the detector array opposite from the

scintillator in a path to receive penetrating radiation that has passed through the scintillator;

a radiation shield (5) disposed between the detector array (1 and 2) and the electronics (6), the radiation shield (5) being substantially absorbing with respect to the penetrating radiation; an electrical wiring (11) electrically connecting the detector array (1 and 2) and electronics (6) (column 3, lines 22-38 and 54-61; column 7, line 55 – column 8, line 7).

Croydon teaches a radiation detector with a radiation shield including openings communicating between the detector array (1) and the electronics; and electrical feedthroughs (8) passing through the radiation shield openings and electrically connecting the detector array (1) and the electronics (4 and 5) (see Fig. 1; page 8, lines 10-23). This arrangement provides user with the radiation detector comprising more straightforward and compact electrical wiring arrangement for connecting the detector array and electronics. Additionally, the electrical wires are shielded minimizing possible interference from the penetrating radiation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use electrical feedthroughs passing through the radiation shield openings and electrically connecting the detector array and the electronics as suggested by Mochizuki and Croydon in the apparatus of Gorgon, since such a modification would provide user with the improved radiation detector which is more compact and protected since the sensitive electrical connections and electronic elements are shielded minimizing possible interferences from the penetrating radiation.

***Allowable Subject Matter***

8. Claims 4, 5, 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 4, prior art fails to teach or make obvious a radiation detector module comprising: an electrical conductor; and an insulator electrically isolating the electrical conductor from the radiation shield as claimed including all of the remaining limitations of the base claim and any intervening claims.

With respect to claim 5, prior art fails to teach or make obvious a radiation detector module comprising: an insulating support that retains the electrical feedthroughs in an arrangement comporting with an arrangement of the radiation shield openings as claimed including all of the remaining limitations of the base claim and any intervening claims.

With respect to claim 18, prior art fails to teach or make obvious a radiation detector module wherein each radiation shield opening is slanted relative to an incoming direction of the penetrating radiation to prevent the penetrating radiation from passing through the opening as claimed including all of the remaining limitations of the base claim and any intervening claims.

With respect to claim 19, prior art fails to teach or make obvious a radiation detector module comprising: a second radiation shield disposed between the detector

array and the electronics, the second radiation shield being substantially absorbing with respect to the penetrating radiation; second electrical feedthroughs passing through openings of the second radiation shield, the second electrical feedthroughs being spatially offset respective to the first electrical feedthroughs that pass through openings of the first radiation shield to prevent penetrating radiation from reaching the electronics as claimed including all of the remaining limitations of the base claim and any intervening claims.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ik/April 20, 2007

A handwritten signature in black ink, appearing to read "Irakli Kiknadze". The signature is fluid and cursive, with the first name "Irakli" and the last name "Kiknadze" clearly distinguishable.

Irakli Kiknadze  
Patent Examiner